

Laboratory and field preliminary tests of *Metarhizium anisopliae* formulated with neem oil (Suneem) against *Anopheles gambiae* sl adult emergence

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ABSTRACT:

Metarhizium anisopliae have shown great potential for the control of malaria vectors. However, their ability to control aquatic stages of anopheline vectors with conidial formulation is need. In laboratory condition (25°C and 76%RH), we formulated *M. anisopliae* with emulsifian neem oil (Suneem 1%) before application on *An. gambiae* larvae at 4, 6, 8, 10 and 12 % (v/v) to determine the LD₉₀. We applied in semi-field environment, the LD₉₀ of the formulation into artificial vats on the *Anopheles gambiae* sl larvae collected from many breeding sites at dry and rain seasons.

In laboratory condition, the LD₅₀ was 4.4×10^6 spores/ml and the LD₉₀ was not obtained 24 after exposure. The probite line equation was $Y = 1.61x - 0.55$ and $R^2 = 0.9793$. The LD₅₀ was 3.1×10^6 and the LD₉₀ was 5.3×10^6 spores/ml 48 h after exposure. The probite line equation was then $Y = 1.69x + 1.79$ and $R^2 = 0.9757$. Microscope magnifying revealed also the fungal attack via cuticle and mycelia germination one dead larvae and pupae.

In semi-field environment, treatment revealed that, at 5.3×10^6 spores/ml, the formulation has a great emergence inhibition of mosquito adult formation. No significant difference was observed between dry and rain season application of *M. anisopliae* on the larvae. Therefore, a combination of *M. anisopliae* with Suneem may provide a more sustainable management strategy for malaria vectors control at the larval stages.

Keywords: *Metarhizium anisopliae*, *Anopheles gambiae*, biological control